REMARKS

Claims 6, 9-11, 13 and 22-74 are pending in the above-captioned patent application following this amendment. Claims 6, 9-11, 13 and 22-74 have been rejected. The applicants respectfully traverse the rejection of claims 6, 9-11, 13 and 22-74.

No new matter is believed to have been added by this amendment. Consideration of the pending application is respectfully requested.

Interview Summary

On January 8, 2004 and January 23, 2004, the undersigned attorney for the Applicants conducted interviews with the Examiner, Mark Blouin. Prior to the interviews, a proposed response to the Office Action dated November 3, 2003 was faxed to the Examiner. During the interviews, the claim language of all of the independent claims was generally discussed in view of the cited reference. More specifically, the undersigned attorney distinguished the positioning of piezoelectric elements on the load beam, as set forth in the cited reference, from the claim language of the independent claims in the present application. As of the date of filing of this Response to Office Action, the Examiner was unable to provide a definitive determination of the allowability of the claims.

Rejections Under 35 U.S.C. § 102

Claims 6, 9-11, 13 and 22-74 are rejected under 35 U.S.C. § 102(e) as being anticipated by Khan et al. (USPN 6,188,548). The Applicants respectfully traverse the rejection by the Patent Office on the grounds that the cited reference does not teach or suggest the features of the rejected claims, as explained below.

The Patent Office asserts that "...Khan et al. shows (Figs 1-5) head stack assembly for a disc drive including ... a transducer assembly including a load beam (10), a flexure (12) secured to the load beam, a data transducer (40) secured to the flexure (12), a base plate securing the transducer assembly to the actuator arm (Fig. 1), and a fine positioner (piezoelectric elements (32, 34)) secured directly to the base plate, the fine positioner moving a portion of the base plate relative to the actuator arm, wherein the base plate further comprises a positioner cavity (Fig. 5, (23)) that receives the fine positioner, the proximal and distal ends are secured under compression, a flex section (224, 226)

positioned adjacent to the positioner cavity, the flex sections allowing the base plate to flex, a pair of spaced apart positioner cavities (Fig. 5, (23)) that receive the fine positioner, a pair of flex sections that allow the base plate to flex ... ." The applicants respectfully submit that this interpretation of Khan et al. is inaccurate.

Khan et al. is directed toward a disk drive suspension that includes a load beam 10 that is supported by a mount plate 14 having a boss 16. (Col. 5, lines 11-14). The load beam 10 includes a base portion 18, a spring portion 20 and a beam portion 22 that carries a slider 40. (Col. 5, lines 14-16; Figs. 1-3 and 5). The Applicants submit that the mount plate 14, and more particularly the mount plate boss 16, fixes the base portion of the load beam to the actuator arm. Importantly, the mount plate boss 16 is not part of the load beam 10. Further, piezoelectric crystals 32, 34 are bonded to the base portion 18 and the beam portion 22 of the load beam 10. (Col. 5, lines 17-20; Figs. 1-5). Moreover, the spring portion 20 of the load beam 10 includes arcuate sections 36, 38 that are connected to the base portion 18 of the load beam 10 and the beam portion 22 of the load beam 10. (Col. 5, lines 31-42; Figs. 1-5).

Khan et al. does not teach or suggest a base plate that secures the load beam to the actuator arm, with the base plate including one or more flex sections. Further, Khan et al. does not teach or suggest securing a fine positioner (e.g. a piezoelectric element) to the base plate. Because the piezoelectric crystals 32, 34 are secured to the load beam instead of the base plate, the piezoelectric crystals 32, 34 are subject to more severe bending than if the fine positioner were secured to the base plate. Further, more changes to the design of the head stack assembly are required because the piezoelectric crystals 32, 34 are added directly to the load beam.

Additionally, the location of the piezoelectric crystals 32, 34 increases the likelihood of adverse resonance characteristics of the head stack assembly. Moreover, the location of the piezoelectric crystals 32, 34 can increase head gram load loss. Further, because the piezoelectric crystals 32, 34 are not positioned in a positioner cavity in the base plate, the piezoelectric crystals 32, 34 are placed in a shear mode instead of a compression mode. In the sheer mode, the piezoelectric crystals 32, 34 are less resilient to shock loads and vibration. This increases the incidence of piezoelectric crystals 32, 34 stress cracking and reduces the reliability of the piezoelectric crystals 32, 34.

In addition, because of the placement of the piezoelectric crystals 32, 34 on the load beam rather than the base plate, the life of the life of the fine positioner is decreased. The thickness of the base plate is typically three to five times thicker than the load beam. As a result of this design, the load beam is more flexible when compared to the base plate and the piezoelectric crystals 32, 34 are therefore somewhat less protected from shock and vibration.

In contrast to Khan et al., claim 6 requires a "head stack assembly ... comprising: an actuator arm; a coarse positioner that moves the actuator arm relative to the storage disk; a transducer assembly including a load beam, a flexure secured to the load beam, and a data transducer secured to the flexure; a base plate securing the transducer assembly to the actuator arm, the base plate including (i) one or more edges, (ii) a pair of flex sections that cantilever away from at least one of the edges, the flex sections allowing the base plate to flex, and (iii) a pair of spaced apart positioner cavities that are positioned between the flex sections; and a fine positioner secured to the base plate, the fine positioner being positioned in the positioner cavities, the fine positioner moving a portion of the base plate relative to the actuator arm." As provided above, these features are not taught or suggested by Khan et al. Therefore, the rejection by the Patent Office is not supported by the cited reference. Because claims 9-11 and 13 depend directly or indirectly from claim 6, the rejection of these claims is also unsupported by the cited reference.

Claim 22 of the present application is directed to a disk drive that requires "an actuator arm; a transducer assembly including a load beam and a data transducer coupled to the load beam; a base plate that secures the transducer assembly to the actuator arm, the base plate including a flex section that allows the base plate to flex; and a fine positioner that is secured to the base plate so that the fine positioner does not contact the flex section, the fine positioner selectively flexing at least a portion of the base plate." These features are not taught or suggested by Khan et al. Therefore, the rejection by the Patent Office of claim 22 is not supported by the cited reference. Because claims 23-36 depend directly or indirectly from claim 22, the rejection of these claims is also unsupported by the cited reference.

Claim 37 requires "an actuator arm; a transducer assembly including a load beam and a data transducer coupled to the load beam; a base plate that secures the transducer assembly to the actuator arm; and a first piezoelectric motor having a proximal end and a distal end, that ends being secured to the base plate so that the first piezoelectric motor is under compression, the first piezoelectric motor moving a portion of the base plate relative to the actuator arm." These features are not taught or suggested by Khan et al. Therefore, claim 37 is believed to be patentable. Because claims 38-49 depend directly or indirectly from claim 37, they are likewise believed to be patentable.

Claim 50 is directed toward a disk drive that requires "an actuator arm; a transducer assembly including a load beam and a data transducer coupled to the load beam; a base plate that secures the transducer assembly to the actuator arm, the base plate including a plate mount that secures the base plate to the actuator arm; and a pair of piezoelectric motors that are each secured to the base plate between the plate mount and the data transducer, the piezoelectric motors being substantially parallel to each other, the piezoelectric motors moving a portion of the base plate relative to the actuator arm." These features are not taught or suggested by Khan et al. Therefore, the rejection by the Patent Office of claim 50 is not supported by the cited reference. Because claims 51-58 depend directly or indirectly from claim 50, the rejection of these claims is also unsupported by the cited reference.

Claim 59 requires "an actuator arm; a transducer assembly including a load beam and a data transducer coupled to the load beam; a base plate that secures the transducer assembly to the actuator arm, the base plate including a positioner cavity that extends through the base plate; and a fine positioner that is secured to the base plate so that the fine positioner is positioned over at least a portion of the positioner cavity, the fine positioner selectively flexing at least a portion of the base plate." These features are not taught or suggested by Khan et al. Therefore, the rejection by the Patent Office of claim 59 is not supported by the cited reference. Because claims 60-66 depend directly or indirectly from claim 59, the rejection of these claims is also unsupported by the cited reference.

Claim 67 of the present invention is directed toward a method that requires "securing a transducer assembly to an actuator arm with a base plate having a flex section that flexes; securing a fine positioner to the base plate so that the fine positioner is not in contact with the flex section; and flexing the flex section with the fine positioner to cause at least a portion of the base plate to move relative to the actuator arm." These steps are not taught or suggested by Khan et al. Therefore, the rejection by the Patent Office of claim 67 is not supported by the cited reference. Because claims 68-74 depend directly or indirectly from claim 67, the rejection of these claims is also unsupported by the cited reference.

Accordingly, the Applicants respectfully submit that the rejection by the Patent Office under 35 U.S.C. § 102(e) should be withdrawn, and that claims 6, 9-11, 13 and 22-74 should be allowed. Consequently, the application is believed to be in condition for allowance.

Remaining Reference

The reference cited by the Examiner, but not relied on for the rejection of claims, has been noted. The remaining reference is no more pertinent than the applied references, therefore, a detailed discussion of this remaining reference is deemed unnecessary for a full and complete response to the Office Action.

CONCLUSION

In conclusion, Applicant respectfully asserts that claims 6, 9-11, 13 and 22-74 are patentable for the reasons set forth above, and that the application is now in a condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 858-456-1951 for any reason that would advance the instant application to issue.

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Respectfully submitted,

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